

**Topic: Using service delivery platforms to strengthen health systems: an extension of cost-effectiveness analysis and case study**

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In global health debates there has been much discussion of 'health system strengthening' (HSS), investments into the health system that are needed to ensure interventions are delivered efficiently and effectively. Many global agencies and donors are seeking to promote such strengthening. However, there has been little discussion of how HSS might in practice be secured, and there are few methods to support HSS decision-making. This paper therefore seeks to establish a framework for describing and analysing an important element of practical HSS, the creation and improvement of service delivery 'platforms'.

Following the approach of the Disease Control Priorities project, we define delivery platforms to be health service delivery channels on which a range of interventions depend. They can take the form of health centres, first-level, referral or specialized hospitals, or more generally population-based health programmes and community services. The common feature of each of these five types of platform is that they will usually support a range of health service interventions. Therefore, the mix of services that can be delivered by the health system may be highly dependent on the availability, capacity and quality of the platforms put in place by the health system

Reliance on a common delivery platform (such as a hospital) leads to interdependencies between the interventions that use it, often profoundly affecting their costs and benefits. For example, the services that use a health centre can share the financial overheads of the centre, often reducing the unit costs of the intervention compared with a situation where each intervention is delivered independently on separate platforms. Conversely, the absence, or limited capacity, of platforms can also act as a serious constraint to the health system, inhibiting the delivery of services that

should in principle be highly cost-effective. Hitherto there has been surprisingly little study of such issues.

The purpose of this paper is to explore the implications of variations in the characteristics of delivery platforms for the cost-effectiveness analysis of interventions. It takes as its starting point the conventional approach to cost-effectiveness analysis (CEA), which seeks to maximize some concept of value (usually health gain) subject to a budget constraint. However, the usual approach to CEA is adapted to reflect the interdependencies between interventions brought about by their common reliance on a service delivery platform.

Three types of HSS are identified and modelled: (1) investment in quality improvement for an existing shared platform that generates positive benefits across a range of existing interventions; (2) relaxing a capacity constraint for an existing shared platform that currently inhibits the optimization of existing interventions; and (3) providing an entirely new shared platform that can support a number of existing or new interventions. Each of these types of interventions can be thought of as a distinct form of health system strengthening. Theoretical extensions to the basic CEA model are proposed to reflect the three types of HSS associated with platforms. The theoretical models are presented as templates that can be applied to real-world decision problems, and illustrated with real-world cases.

The models are illustrated with stylized numerical examples. The important insight is that – when platforms are an important aspect of services delivery – it becomes important to consider the portfolio of interventions using a platform, and not just undertake piecemeal analyses of individual interventions. The models examine the optimal trade-off between health system strengthening (which improves to efficiency or effectiveness of services indirectly) and directly increasing the coverage of particular interventions delivered by the health system. The principles are also illustrated with a case study using real-world data from a low-income country.

The paper has many policy implications concerning the nature and timing of health system reforms. For example, a platforms perspective may be necessary when developing the range of services to be included in a health benefits package (HBP) as countries make the transition towards universal health coverage. The implications of this research are that the optimal package of care may be dependent on the health system infrastructure in place, particularly in countries with diverse regions with different delivery mechanisms and system design. Therefore, if a

uniform national HBP is put in place, some localities with atypical platforms may need higher levels of reimbursement so that they are able to deliver the package, or may need assistance in reconfiguring their systems so as to maximize the efficiency with which they can deliver the chosen package in the future.

The paper indicates that it is unlikely that conventional cost-effectiveness results from other settings will be directly transferrable to a new decision context involving service delivery platforms. Whilst the benefits of treatments might remain reasonably unchanged between settings, the incremental costs are likely to vary considerably depending on the platforms and cost structures in place in the health system under scrutiny. The implications for researchers are that they should be cautious about transferring uncritically results from one setting to another, and should report CEA results (particularly costs) in a standardized and disaggregated form so that they can be adapted by others to specific contexts. However, by refining models to accommodate such contextual factors, the principles of CEA can be extended to a much wider range of decision problems than hitherto, and its relevance increased accordingly.